WHAT IS CLAIMED IS:

1. A method of preparing a multi-domain, dry deposited liquid-crystal alignment layer, wherein said method is selected from the group consisting of: mechanical mask, photo-resist, UV treatment, and ridge and fringe field.

2. The method of claim 1, wherein said mechanical mask method comprises:

depositing on a transparent conductive layer on a substrate a material to form a dry deposited layer;

masking said dry deposited layer into first domain areas and second domain areas of the dry deposited layer with a mask; and

selectively bombarding said dry deposited layer with an ion beam through said mask.

3. The method of claim 2, wherein said material is selected from the group consisting of: hydrogenated diamond-like carbon, amorphous hydrogenated silicon, silicon carbide (SiC), silicon dioxide (SiO_2), glass, silicon nitride (Si_3N_4), alumina (Al_2O_3), cerium(IV) oxide (CeO_2), tin oxide (SnO_2), zinc titanate ($ZnTiO_2$) and a combination thereof.

4. The method of claim 1, wherein said photo-resist method comprises:

depositing on a transparent conductive layer on a substrate a material to form a dry deposited layer;

partitioning said dry deposited layer into first domain areas and second domain areas of the dry deposited layer;

bombarding said dry deposited layer with a first ion beam; thereafter

covering said first domain areas of said dry deposited layer with a mask leaving said second domain areas open;

bombarding said second domain areas with a second ion beam; and

removing said mask.

5. The method of claim 4, wherein said step of partitioning comprises the step of covering only said first domain areas with a mask.

6. The method of claim 5, wherein said step of covering comprises the step of applying a layer of photo-resist.

7. The method of claim 1, wherein said UV treatment method comprises:

depositing on a transparent conductive layer on a substrate a material to form a dry deposited layer;

partitioning said dry deposited layer into first domain areas and second domain areas of the dry deposited layer;

selectively exposing one of said first and said second domain areas to UV light; and

bombarding both said first and said second domain areas with an ion beam in a single direction to produce in non-UV exposed domain areas a pretilt angle different from the areas that were exposed to UV light.

8. The method of claim 1, wherein said ridge and fringe field method comprises:

providing a top substrate having a surface;

providing a color filter on said top substrate;

providing a transparent conductive layer disposed over said color filter;

building a polymer ridge on said transparent conductive layer on the color filter side;

depositing on said surface of said transparent conductive layer and said ridge a material to form a dry deposited alignment layer; and

bombarding said dry deposited layer with an ion beam under conditions to produce a low pretilt angle.

9. A multi-domain, wide viewing angle liquid-crystal display, comprising:

a bottom substrate having a first surface;

a first transparent conductive layer disposed over said first surface of said bottom substrate;

a top substrate having a second surface;

a color filter layer disposed over said second surface of said top substrate;

a second transparent conductive layer disposed over said color filter;

a first dry deposited liquid-crystal alignment layer over said first transparent conductive layer;

a second dry deposited liquid-crystal alignment layer over said second transparent conductive layer; said second dry deposited liquid-crystal alignment layer being spaced adjacent to and facing said first dry deposited liquid-crystal alignment layer;

a plurality of uniformly sized transparent or non-transparent spacers distributed within said space; and

a liquid-crystal material disposed in the space therebetween;

wherein each of said first alignment layer and said second alignment layer is divided into a plurality of pixels each having a boundary and at least two domains; and wherein each of said multi-domain, dry deposited liquid-crystal alignment layers is obtained by a method selected from the group consisting of: mechanical mask, photo-resist, UV treatment, and ridge and fringe field methods.

10. The multi-domain, wide viewing angle liquid-crystal display of claim 9, wherein said domains of said first and said second dry deposited liquid-crystal alignment layers are obtained by mechanical mask method.

11. The multi-domain, wide viewing angle liquid-crystal display of claim 10, wherein said mechanical mask method comprises:

depositing on a substrate a material to form a transparent dry deposited alignment layer;

masking said dry deposited layer into first domain areas and second domain areas of the dry deposited layer with a mask; and

selectively bombarding said dry deposited layer with an ion beam through said mask.

12. The multi-domain, wide viewing angle liquid-crystal display of claim 11, wherein said material is selected from the group consisting of: hydrogenated diamond-like carbon, amorphous hydrogenated silicon, silicon carbide (SiC), silicon dioxide (SiO_2), glass, silicon nitride (Si_3N_4), alumina (Al_2O_3), cerium(IV)

oxide (CeO_2), tin oxide (SnO_2), zinc titanate ($ZnTiO_2$) and a combination thereof.

13. The multi-domain, wide viewing angle liquid-crystal display of claim 11, wherein said ion beam is provided from a source of ion beam selected from the group consisting of: argon, nitrogen, oxygen, and a mixture thereof.

14. The multi-domain, wide viewing angle liquid-crystal display of claim 9, wherein each of said pixels have a first domain and a second domain.

15. The multi-domain, wide viewing angle liquid-crystal display of claim 14, wherein said first domain and second domain have a different ion bombardment direction.

16. The multi-domain, wide viewing angle liquid-crystal display of claim 15, wherein both of said first and said second dry deposited layers on said bottom and said top substrates have been bombarded.

17. The multi-domain, wide viewing angle liquid-crystal display of claim 9, wherein said liquid-crystal material is selected from the group consisting of a liquid-crystal having left-handed chirality, a liquid-crystal having right-handed chirality, and a liquid-crystal having no chirality.

18. The multi-domain, wide viewing angle liquid-crystal display of claim 9, wherein said domains of

said first and said second dry deposited liquid-crystal alignment layers are obtained by photo-resist method.

19. The multi-domain, wide viewing angle liquid-crystal display of claim 18, wherein each of said pixels have a first domain and a second domain.

20. The multi-domain, wide viewing angle liquid-crystal display of claim 18, wherein said photo-resist method comprises:

depositing on a transparent conductive layer on a substrate a material to form a dry deposited layer;

partitioning said dry deposited layer into first domain areas and second domain areas of the dry deposited layer;

bombarding said dry deposited layer with a first ion beam; thereafter

covering said first domain areas of said dry deposited layer with a mask leaving said second domain areas open;

bombarding said second domain areas with a second ion beam; and

removing said mask.

21. The multi-domain, wide viewing angle liquid-crystal display of claim 20, further comprising:

repeating the steps as needed.

22. The multi-domain, wide viewing angle liquid-crystal display of claim 9, wherein said domains of said first and said second dry deposited liquid-crystal alignment layers are obtained by said UV treatment method.

23. The multi-domain, wide viewing angle liquid-crystal display of claim 22, wherein each of said pixels have a first domain and a second domain.

24. The multi-domain, wide viewing angle liquid-crystal display of claim 22, wherein said UV treatment method comprises:

depositing on a transparent conductive layer on a substrate a material to form a dry deposited layer;

partitioning said dry deposited layer into first domain areas and second domain areas of the dry deposited layer;

selectively exposing one of said first and said second domain areas to UV light; and

bombarding both said first and said second domain areas with an ion beam in a single direction to produce in said non-UV exposed domain areas a pretilt angle different from the areas that were exposed to UV light.

25. The multi-domain, wide viewing angle liquid-crystal display of claim 22, wherein said UV treatment method comprises:

depositing on a transparent conductive layer on a substrate a material to form a dry deposited layer;

partitioning said dry deposited layer into first domain areas and second domain areas of the dry deposited layer;

selectively bombarding one of said first and said second domain areas with an ion beam in a single direction; and

exposing both said first and said second domain areas to UV light to produce in said non-bombarded

domain areas a pretilt angle different from the areas that were bombarded with an ion beam.

26. The multi-domain, wide viewing angle liquid-crystal display of claim 9, wherein said domains of said first and said second dry deposited liquid-crystal alignment layers are obtained by said ridge and fringe field method.

27. The multi-domain, wide viewing angle liquid-crystal display of claim 26, wherein said ridge and fringe field method comprises:

building a polymer ridge on said transparent conductive layer on the color filter side;

depositing on said surface of said transparent conductive layer a material to form a dry deposited layer; and

bombarding said dry deposited layer with an ion beam under conditions to produce a low pretilt angle.

28. The multi-domain, wide viewing angle liquid-crystal display of claim 27, wherein said transparent conductive layer comprises indium tin oxide.

29. An improved method of preparing a liquid-crystal display of the type having the steps of forming a first dry deposited alignment layer, forming a second dry deposited alignment layer, spacing the first dry deposited alignment layer and the second dry deposited alignment layer adjacent to and facing each other and filling a liquid-crystal material in the space therebetween, wherein the improvement comprises the steps of:

forming a first multi-domain dry deposited alignment layer;

forming a second multi-domain dry deposited alignment layer;

spacing said first multi-domain dry deposited alignment layer and said second multi-domain dry deposited alignment layer adjacent to and facing each other; and

filling a liquid-crystal material in the space therebetween;

wherein each of said multi-domain, dry deposited liquid-crystal alignment layers is obtained by a method selected from the group consisting of: mechanical mask, photo-resist, UV treatment, and ridge and fringe field.

30. An improved method of preparing an in-plane switching mode liquid-crystal display of the type having the steps of forming a first polyimide alignment layer and a second polyimide alignment layer, wherein each of the first and second layers is rubbed with a mechanical roll wrapped in a velvet cloth, wherein the improvement comprises the steps of:

forming a first dry deposited alignment layer;

forming a second dry deposited alignment layer;

spacing said first dry deposited alignment layer and said second dry deposited alignment layer adjacent to and facing each other; and

filling a liquid-crystal material in the space therebetween;

wherein each of said dry deposited liquid-crystal alignment layers is obtained by a method selected from the group consisting of: mechanical mask, photo-resist, UV treatment, and ridge and fringe field.

31. A wide viewing angle in-plane switching mode liquid-crystal display, comprising:

a bottom polarizer;

a bottom substrate;

a top polarizer;

a top substrate;

a color filter layer disposed over a surface of said top substrate;

a plurality of common electrodes disposed in the bottom substrate plane and a plurality of pixel electrodes disposed in a staggering relationship therewith to form a comb-like structure for producing an electric field parallel to plane of said bottom substrate so that when when operated, the molecules of said liquid-crystal material are swithched to rotate by said vertical electric field in a direction parallel to the substrate surface;

a first dry deposited liquid-crystal alignment layer over said bottom substrate and said comb-like electrodes;

a second dry deposited liquid-crystal alignment layer over said color filter layer; said second dry deposited liquid-crystal alignment layer being spaced adjacent to and facing said first dry deposited liquid-crystal alignment layer;

a plurality of uniformly sized transparent or non-transparent spacers distributed within said space; and

a liquid-crystal material disposed in the space therebetween.

32. The liquid-crystal display of claim 31, wherein said method of obtaining each of said dry

deposited liquid-crystal alignment layers comprises: treating a dry deposited layer with an ion beam in a direction making from about 10 to about 20 degree angle with the plane of the electrodes.

33. The liquid-crystal display of claim 31, wherein each of said common electrodes on one end is in communication with a storage capacitor, wherein each of said pixel electrodes is in communication on one end with said storage capacitor and on the other end with a thin film transistor, said thin film transistor being in communication with a data bus line and a gate bus line.